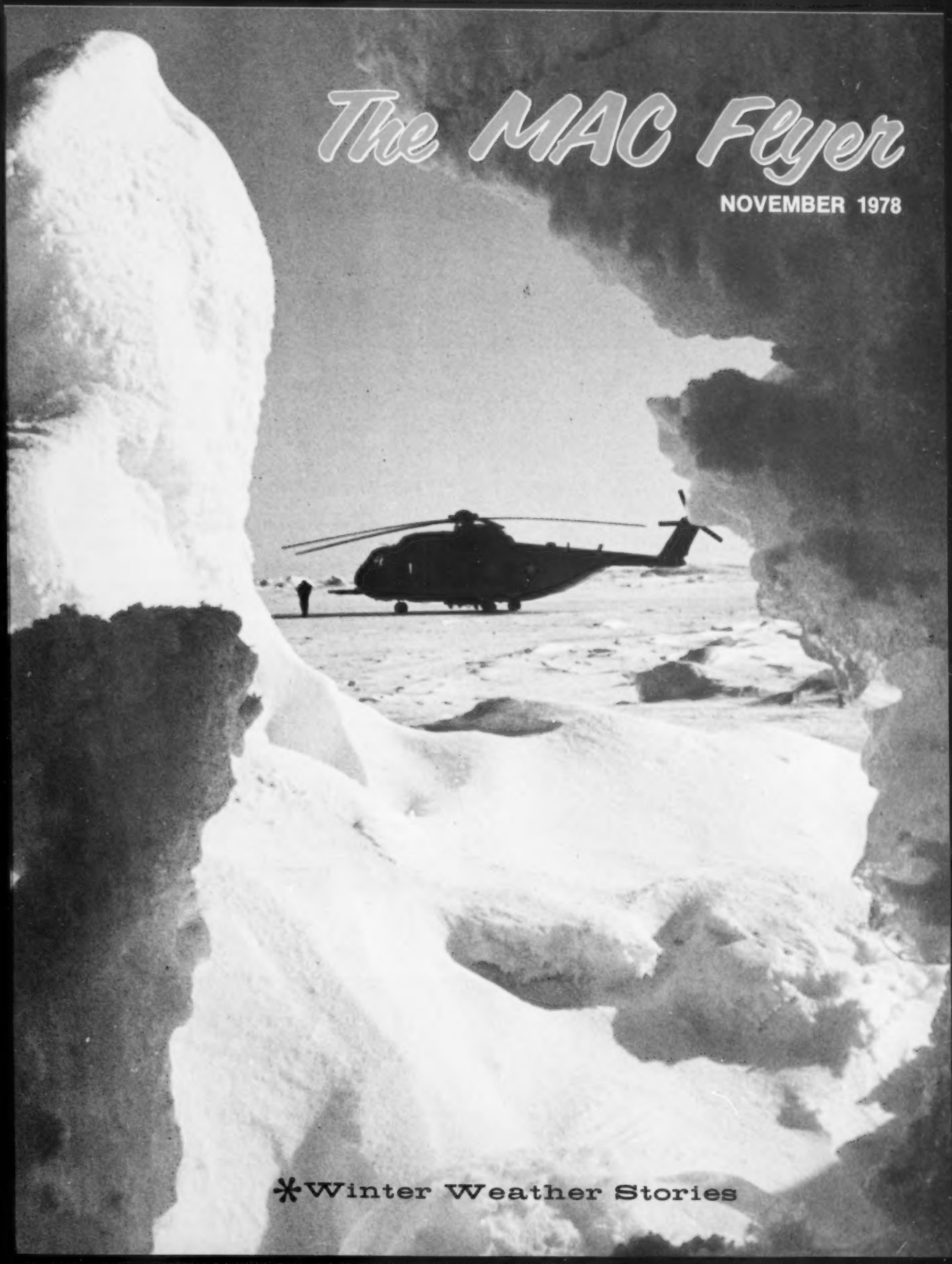
The MAC Flyer
NOVEMBER 1978
*Winter Weather Stories

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The MAC Flyer

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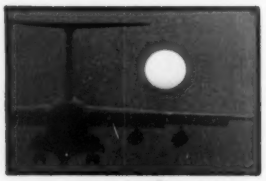

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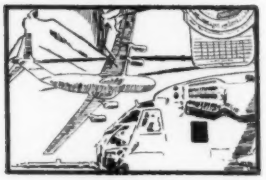

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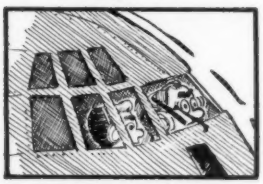

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***Winter Weather Stories**

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Here it is folks...

A Contest That Will Suit You to a "T"

Time seems to go by fast these days whether you're having fun or not, and already the old calendar on the wall says it's time once again to crank up the annual MAC Flying Safety Writing Contest. (Drumroll, please.)

All you have to do is put on your thinking cap, grab a crayon or a pencil stub and knock together a literary *tour de force* containing a flying safety message. You can express yourself in prose, poetry, philosophy, or whatever, and it can be humorous or serious, factual or pure fantasy. Length should be around 1,000 to 3,000 words, which works out to something between 6 and 14 double-spaced typewritten pages.

When you've struggled with your draft to the point where you feel you won't be arrested for sending it through the mail, submit two copies in typewritten, double-spaced manuscript form on 8 by 10½-inch paper. Identify your potential masterpiece by title only and attach a cover sheet telling us all about yourself.

In addition to all the tremendous, altruistic satisfaction you will receive for having shared your profound wisdom with your fellow flyer-persons, there is also a bit of *lagniappe* in the form of a world-famous, colorful C.R. Terror T-shirt for every entrant whose submission qualifies for judging under our contest rules. Eligible finishers additionally receive handsome engraved plaques or desk sets.

There you have it, so don't delay. Satisfy a number of your latent urges at once by writing down your favorite "war story" and get some good loot in the process. Contest ends 31 March 1979. Entries should be mailed to:

Flying Safety Writing Contest
HQ MAC/IGFE
Scott AFB IL 62225

Some are weatherwise, some are otherwise.

—Benjamin Franklin

Dear Doc,

I've spent my last two tours flying Hueys at bases in the South. I just received orders to a MAC detachment at a northern base with a reporting date of NLT 15 December. Frankly, I'm worried. One of my friends has been telling me horror stories about winters up there. He said that besides the chance of getting frostbite or having a coronary from shoveling snow, it was so cold that they had to keep the brass monkeys inside.

He figures that this winter will be even worse, because the fuzzy black caterpillars this year not only have shaggy coats—a few have been seen wearing mukluks! Can I survive?

Help,
Fling-Wing Flyer

Dear Fling,

Not to worry! If you take good care of yourself and apply some common sense rules you can adapt very successfully to your new assignment. As an encouraging example, I'll tell you that for 15 years there hasn't been a single documented case of frostbite among the Lapps who live in the northern part of Sweden where temperatures often go below -30°F—they even herd reindeer with snowmobiles. These folks don't have any special built-in protection, but they do know how to dress and live in a cold climate.

You were right to be concerned about frostbite, however. At its worst it can be a painful and disfiguring injury. Frostbite is the freezing of the moisture in your body's tissues. Generally, frostbite is classified as either superficial or deep. Superficial frostbite damages only the outer surface layers of the skin and you can usually make an unscarred recovery. Deep frostbite, on the other hand, is serious business because muscles, nerves and sometimes

by **Col John H. Calvert, Jr., MC**
Chief, Aerospace Medicine
USAF Medical Center, Scott AFB, Illinois

even bones may be frozen. Quite often, deep frostbite results in gangrene and amputation of the affected areas.

Frostbite can sneak up on you because there isn't much pain associated with the freezing process. You may feel some tingling, stinging, or a dull ache as the flesh freezes, but that's soon followed by numbness. Actually, if the cold stops hurting, it's likely that you already have been injured. At first the exposed skin may look red. Then it becomes progressively pale or waxy white. Next, the affected body part may feel wood-hard, and if it's truly frozen the skin will be dead white and brittle. Now you're in real trouble, but it won't hurt since the frozen member lacks sensation. Studies show that every part of the body can be frostbitten, but ears, nose, hands, and feet are most commonly affected.

Destructive Duo

Low temperatures and wind team up to destroy tissue. Figure 1 is a wind chill chart based on the combined effects of temperature and wind velocity acting on exposed flesh. The wind velocity is important because your body loses heat faster when the wind sweeps away the thin layer of warm air next to your skin. (Low humidity or precipitation also increase body heat loss.) Any movement of air past your body—walking, running, or riding in an open vehicle—will have the same effect as the wind.

Keep C-O-L-D

The keys to preventing cold injury are conserving body heat and maintaining good blood circulation. The supply folks will give you special winter clothing, and if you use it right it will protect you. Here are a few simple rules, with an acronym (cold) to help you to remember them.

Clean. Keep your clothes clean. Dirt, oil, lubricants, and moisture clog the air spaces in clothes and rob the material of its insulating properties.

Overheating. When you're working or if the temperature rises, avoid overheating by removing excess layers of clothing before sweating gets the inner layers wet.

Loose layers. Wearing loose layers of clothing traps air between the layers where it acts as insulation. Loose clothing also allows efficient blood circulation. Be extra careful not to restrict blood flow to hands and feet.

Dry. Keep outside clothes dry. Wet clothes actually increase heat loss. The outer layer of clothes

should be water-repellent, but not waterproof (except for footwear), so that the garments can "breathe."

Another preventive measure is early recognition of cold injury symptoms. If you're outside with another person you can check to see if your partner's skin is becoming red or waxy white. By yourself, your only warning may be tingling, stinging, or a dull ache in the affected body part. If you recognize the symptoms, immediate treatment will usually prevent serious injury.

Get Warm

If you suspect a cold injury, the best thing to do is get to a nice warm hospital and let us medical folks take care of you. However, if you can't get medical help right away, here are some basic first aid rules to follow.

First, get warm! Get out of the cold and protect the injured part from further damage.

Next, remove any constricting clothing, then wrap up in blankets to help your body use its own heat. Drinking hot liquids such as tea or coffee is okay, but alcohol is a no-no. Alcohol (like nicotine) has an undesirable effect on the circulatory system and may do more harm than good.

Resist the temptation to rub the affected area. The skin is already damaged and rubbing will only add insult to injury and possibly lead to permanent damage. Don't apply direct, dry heat to the injured area because frozen skin doesn't have any feeling; you could burn the already frostbitten skin. Don't break any blisters—an open blister is an invitation to infection. The injured part should be wrapped in a clean, loose-fitting dressing.

The next step, if at all possible, is to get medical help. It's possible to thaw a frozen part, but it's best done at a medcial facility. To prevent further injury the temperature used in the thawing process must be carefully controlled and an antiseptic environment is a must. And it's going to hurt a lot. With proper treatment, however, the injured part can usually be saved and restored to full useful function.

Remember that *prevention* is the best cure, Fling, and if you wear the right clothes you should stay warm and safe during your tour up North. If you do get frostbite, get out of the cold as soon as possible and seek medical help promptly. Regarding an assignment to the frozen hinterland, look at the bright side of things: snow skiing is just as much fun as water skiing, so think snow.

Keep cool,
Doc

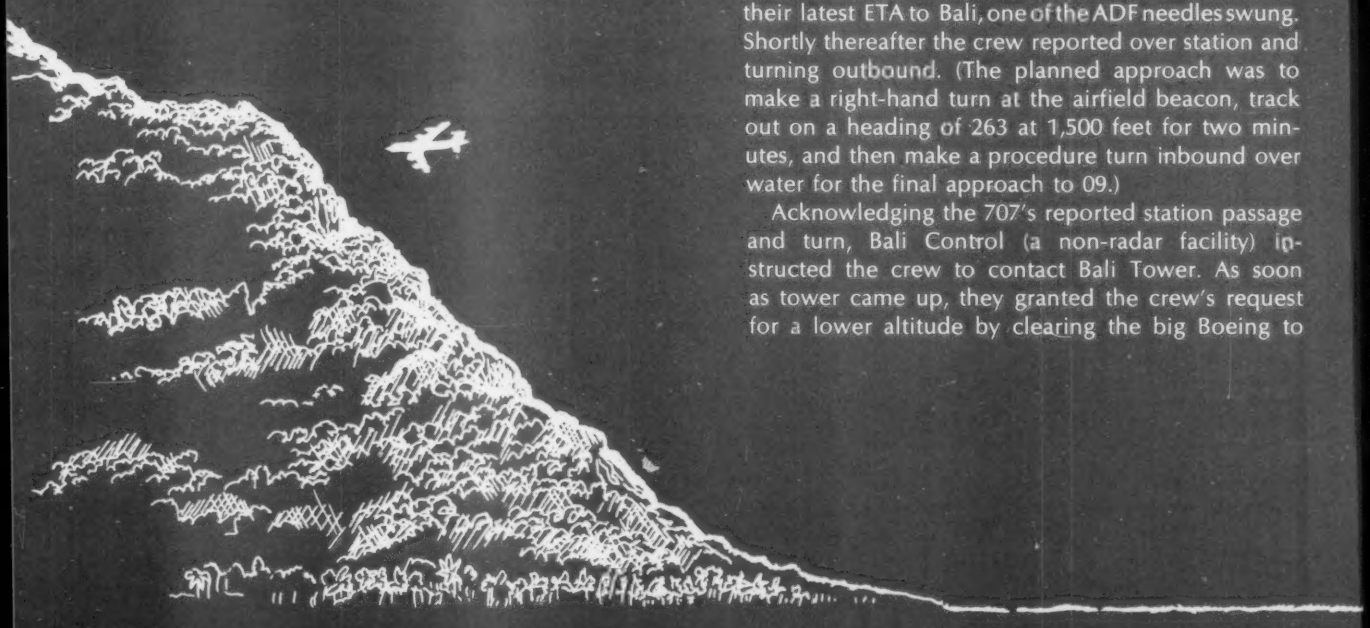
Figure 1, Wind chill factor chart.

Wind Speed		Cooling Power of Wind Expressed as Equivalent Chill Temperature																			
Knots	mph	Temperature (°F)																			
calm	calm	40	35	30	25	20	15	10	5	0	−5	−10	−15	−20	−25	−30	−35	−40	−45	−50	−55	−60
		Equivalent Chill Temperature																			
3-6	5	35	30	25	20	15	10	5	0	−5	−10	−15	−20	−25	−30	−35	−40	−45	−50	−55	−65	−70
7-10	10	30	20	15	10	5	0	−10	−15	−20	−25	−35	−40	−45	−50	−60	−65	−70				
11-15	15	25	15	10	0	−5	−10	−20	−25	−30	−40	−45	−50	−60	−65	−70						
16-19	20	20	10	5	0	−10	−15	−25	−30	−35	−45	−50	−60	−65								
20-23	25	15	10	0	−5	−15	−20	−30	−35	−45	−50	−60	−65									
24-28	30	10	5	0	−10	−20	−25	−30	−40	−50	−55	−65	−70									
29-32	35	10	5	−5	−10	−20	−30	−35	−40	−50	−60	−65										
33-36	40	10	0	−5	−15	−20	−30	−35	−45	−55	−60	−70										
Winds above 40 mph have little additional effect.		LITTLE DANGER					INCREASING DANGER (Flesh may freeze within 1 min.)															

Mishap with a Moral

TRAGEDY *in* Paradise

The operative word is "cross-check" in this needless airline crash.



Not very far below the equator, the island of Bali forms one link in the long chain of Indonesian islands. Rugged peaks jutting as high as 10,000 feet offer mute testimony to the archipelago's primeval volcanic origins.

Bali . . . a name that conjures up visions of lush tropical paradise, friendly natives, unspoiled expanses of sandy beaches, and exotic food and souvenirs. Bali . . . "a nice place to visit, but I wouldn't want to live there," most of us would probably say. Most of us wouldn't want to die there either, but 11 crewmembers and 96 hapless air travelers had no choice the night their big 707 jetliner tore itself apart against the side of a 4,000-foot mountain on the northwest side of the island.

The ill-fated flight was a routine scheduled run from Hong Kong to Sydney, with a quick stop at Bali. Everything proceeded normally in every respect during the first four hours of the journey, and about 20 minutes out, the crew contacted Bali Control with a revised ETA of 1527—three minutes ahead of their original flight plan estimate. They were cleared to descend to flight level 120 and a minute later were informed that runway 09 was the active. During the descent, eight minutes ahead of their latest ETA to Bali, one of the ADF needles swung. Shortly thereafter the crew reported over station and turning outbound. (The planned approach was to make a right-hand turn at the airfield beacon, track out on a heading of 263 at 1,500 feet for two minutes, and then make a procedure turn inbound over water for the final approach to 09.)

Acknowledging the 707's reported station passage and turn, Bali Control (a non-radar facility) instructed the crew to contact Bali Tower. As soon as tower came up, they granted the crew's request for a lower altitude by clearing the big Boeing to

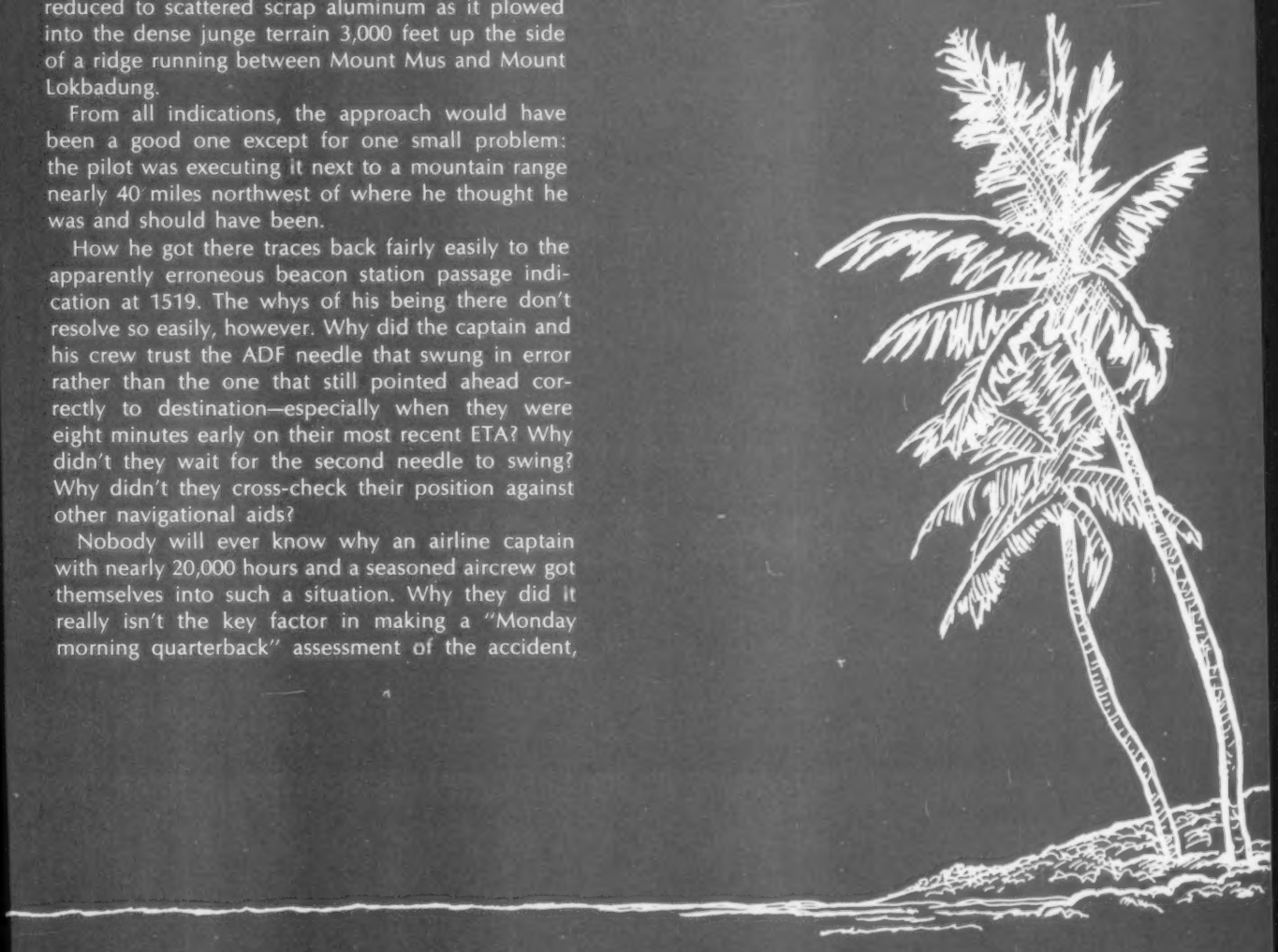
2,500 feet. The 707 drivers reported "level, 2500" at 1523 and confirmed that they would "check inbound" when they had the runway in sight. Their last transmission attempt was made at 1526 when the pilot in command called, "Hey, tower, what is your visibility out there now?"

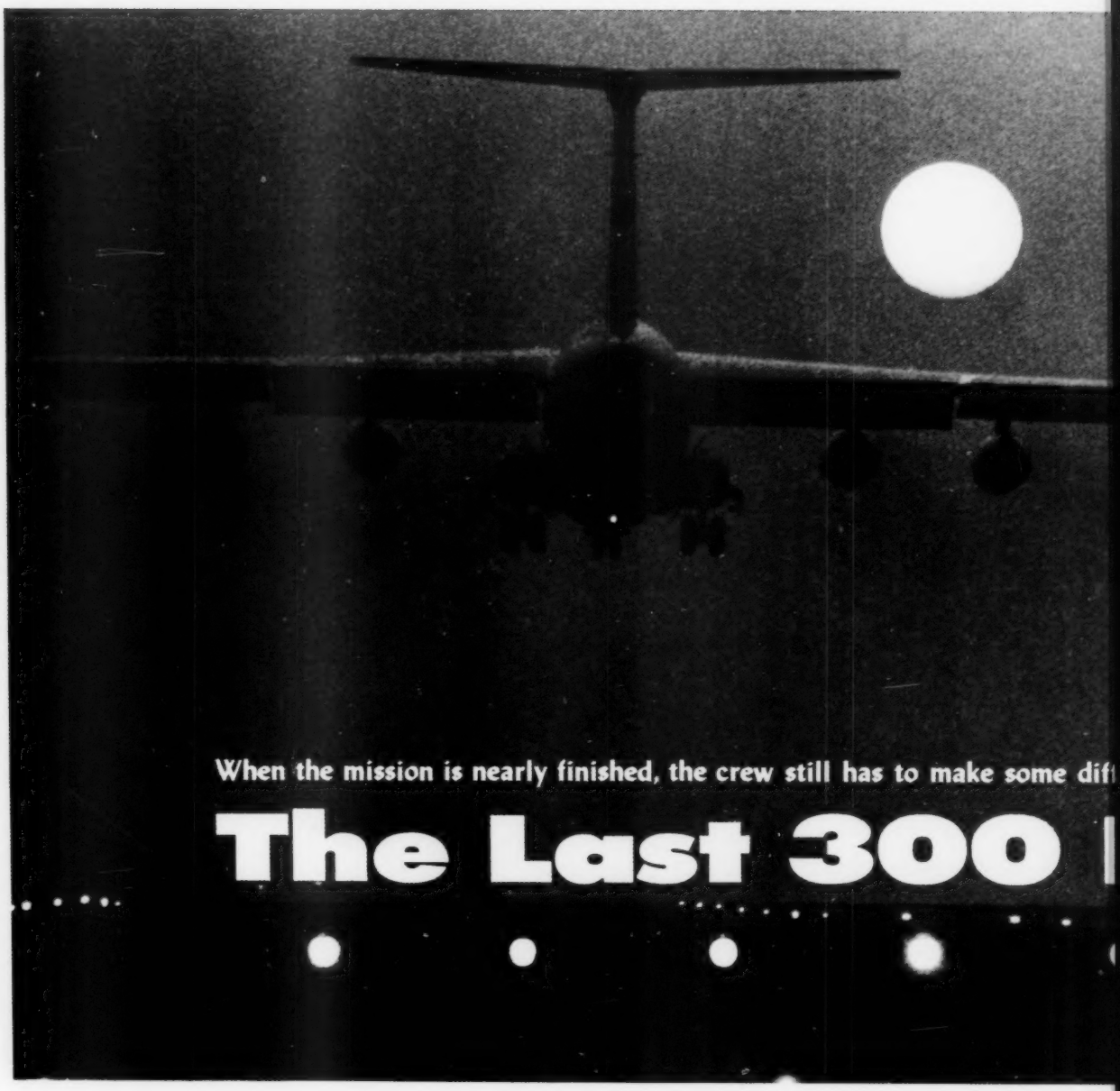
Tapes from the air traffic control voice recorder indicate the Bali Tower never heard the captain's call, but it wouldn't have made much difference at that point had they been able to tell him the visibility was clear and eight miles. Within seconds of the attempted request for information, the 707 was reduced to scattered scrap aluminum as it plowed into the dense junge terrain 3,000 feet up the side of a ridge running between Mount Mus and Mount Lokbadung.

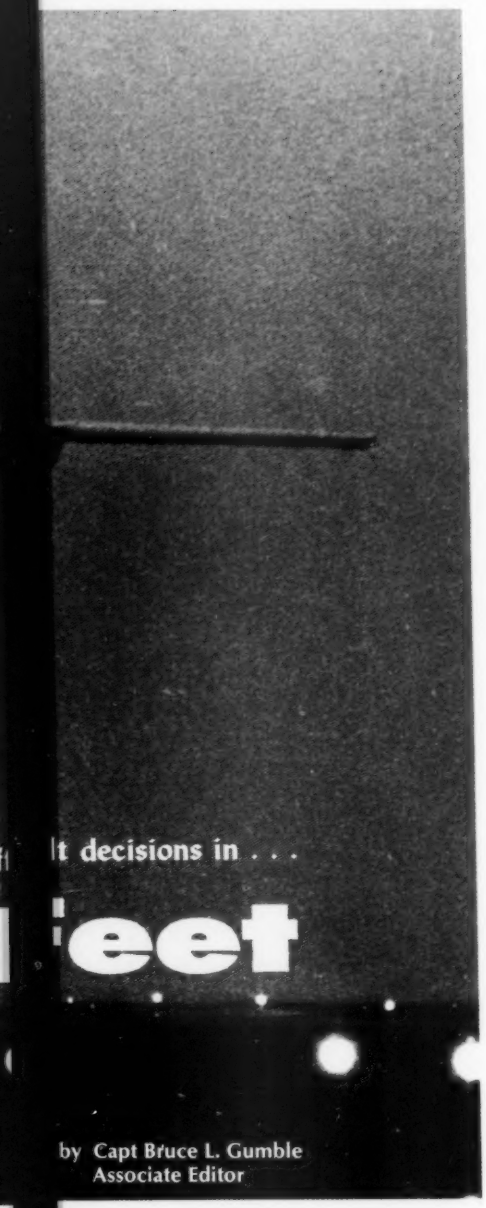
From all indications, the approach would have been a good one except for one small problem: the pilot was executing it next to a mountain range nearly 40 miles northwest of where he thought he was and should have been.

How he got there traces back fairly easily to the apparently erroneous beacon station passage indication at 1519. The whys of his being there don't resolve so easily, however. Why did the captain and his crew trust the ADF needle that swung in error rather than the one that still pointed ahead correctly to destination—especially when they were eight minutes early on their most recent ETA? Why didn't they wait for the second needle to swing? Why didn't they cross-check their position against other navigational aids?

Nobody will ever know why an airline captain with nearly 20,000 hours and a seasoned aircrew got themselves into such a situation. Why they did it really isn't the key factor in making a "Monday morning quarterback" assessment of the accident, though. The moral in this needless tragedy is that the captain and his crew should have been suspicious when items like ADF needles, station passage swings, and ETA's disagreed significantly. If they had bothered to cross-check and make absolutely certain of their whereabouts, they would have been permitted, along with their fellow crewmembers and passengers, the option of briefly sampling the offerings of an exotic tropic isle and moving on . . . instead of having to RON there for eternity.




When the mission is nearly finished, the crew still has to make some dif
The Last 300



t decisions in . . .

eet

by Capt Bruce L. Gumble
Associate Editor

Threshold Crossing Height . . . for all aircraft will be no lower than 50 feet . . . .

—AFR 60-16/MACSUP 1

It's been a long time since that rule went into the books—about 23 years, in fact. It was written to help stop a rash of short-landing accidents which were costing MATS a lot of airplanes and a lot of lives at that time. Other changes came about for the same reason: more ILS installations, better precision radar, more VASI's and visual descent points (VDP's) for nonprecision approaches. Now the problem seems to be pretty well under control. Even on a night approach to Murky Bottom Air Patch, we don't have to worry about plunking it into the approach lights . . . or do we?

Maybe we've just been lucky. In a special study, the National Transportation Safety Board found that from 1968 through 1972, 47 percent of all commercial air carrier approach and landing accidents happened during an ILS approach. But the real eye-opener was that almost every mishap occurred *after* the flight crew had seen either the ground, the airport, or the airport environment. The NTSB examined 12 accidents and 5 incidents in detail and found still more similarities:

- The major hazard was not the height of the ceiling, but rather the restrictions to visibility.
- In several cases, the crew lost sight of the runway after transitioning to visual flight but continued the approach anyway.
- In 11 of the approaches, nobody made required callouts of deviations from airspeed, descent rate, or glide path after the aircraft had reached the DH/MDA.
- There was a tendency for the pilot not flying the aircraft to discontinue his instrument scan after reporting visual contact.
- In every case, procedures required the pilot flying the aircraft to change from instrument to visual flight when informed that the runway environment was in sight.

The question remains—since flying an instrument approach in a 727 isn't much different from doing the same thing in a 141 or Herk, why haven't we pranged an airplane during a low-vis instrument approach lately? Are MAC pilots more competent than the airline crews in the NTSB study? Are our procedures markedly better? Do we have less exposure to limited-visibility instrument approaches? Not likely.

The most probable answer is the one mentioned earlier: We've been lucky. And besides, we have lost some airplanes recently—in visual conditions but with limited ground references—for the same reasons the NTSB study turned up. The lesson is clear. If *somebody* isn't on the gauges during

the visual segment of an approach in restricted visibility, the door to disaster is wide open.

From Gauges to Ground

Since many accidents occur after the runway environment is in sight, let's take a close look at that transition period. We'll assume that a fictional crew is flying an ILS approach with weather at or near minimums. There is some restriction to visibility below the reported ceiling and the AC is doing the flying from the left seat. It's a good, stable approach until the copilot reports, "Runway in sight." Then the AC transitions to visual flying, the approach becomes destabilized, and the airplane develops a high sink rate and impacts several hundred feet short of the overrun. Everybody survives, so the accident board gets to ask a lot of questions. Most of those questions begin with "why," and we'll take them one at a time.

First of all, why did the approach become destabilized? There could be several possible reasons—windshear, visual illusions, an autopilot malfunction, the tendency to "duck under" the glide path after going visual. But the answer to this question isn't really important, because the destabilized approach by itself didn't cause the accident.

Next question: Why didn't the AC recognize the development of a hazardous condition? Again, we've got several possibilities. Maybe he had good visual cues at first but then lost them in a rain shower or patch of fog and gave in to the familiar temptation to keep staring at the same spot, waiting for them to reappear. Maybe he just didn't have time; with limited visibility, it can take several seconds to refocus the eyes, absorb the visual cues, and interpret what they're telling you. In any case, the accident still isn't inevitable.

Now we come to the guy with the last chance to save the situation—the copilot. Why didn't *he* see what was going on and call for a go-around?

The regs don't tell the copilot what to do after he calls "land" or "go around," but that doesn't mean he does nothing.

There's just one answer to this one. He was looking outside instead of watching the instruments and was subject to the same limitations as the AC. He couldn't spot a 2,000-fpm sink rate because the only clue was on the panel, and he wasn't looking there.

Okay, here's the snapper: *Why wasn't the copilot monitoring the instruments?*

Good question!

Expectancy, Trust, and Indirection

Let's return to our fictional crew as they begin to break out of the weather. The copilot has been intent on the gauges, glancing up every now and then to see if he can pick up some visual cues. He knows the weather is close to minimums, and he's a little tense. He's careful to make all the required altitude calls precisely. The tension increases as decision height comes closer and closer.

Suddenly, the approach lights begin to appear. The copilot sees them, notices that the airplane is well lined up, and calls, "Land." There's a strong feeling of relief—he's done his job, and now it's up to "Ol' Goldenhands" to get the bird on the ground. Now that he's visual, it should be a piece of cake. The copilot keeps his attention outside, watching the AC make another routine landing, and then . . . CRRUNNCH!

Now we've got part of the answer to that last question. The copilot wasn't on the gauges *because he didn't expect anything to go wrong.* He'd seen hundreds of landings, and not one had ended up short of the overrun. His expectancy of a normal landing trapped him.

But expectancy, or mind-set, was only one jaw of the trap. Even if the copilot had been suspicious that not all was well, he might have kept his attention outside anyway. He might have decided to place his trust in two rather fallible entities: the aircraft commander and his own eyes.

Whether they'll admit it or not, most copilots tend to trust the

AC's they fly with. Generally, the AC is the most experienced pilot on the crew. He's expected to have the smoothest hands, the best judgment, and the most thorough training. In short, the AC should be capable of handling any situation that comes up, and the copilot trusts him to do so. Not that there's anything wrong with placing trust in the left-seater—unless the copilot lets that trust blind him to the fact that everybody makes a mistake now and then.

As for trusting your own eyes—we've known for years that under conditions of restricted visibility, visual cues simply can't be relied on. But the temptation to look outside is almost overwhelming, since we make the great majority of our approaches and landings under conditions of good visibility.

Now we come to still another reason why the copilot didn't stay on instruments: *Nobody told him to.* Our regulations provide all sorts of guidance about what to do until the "land" or "go around" call, but don't say a word about what happens afterward. With no direction from published procedures or from the aircraft commander, the copilot is almost certain to give in to the temptation to look outside once the runway environment is in sight.

Several of the major commercial airlines have instituted a procedure which is designed to cope with this problem. The procedure calls for the first officer to fly the approach, with the intention of making a missed approach if the captain hasn't taken control before the aircraft reaches decision height. When the captain takes over, the first officer stays on instruments and calls out any deviations from normal airspeeds or descent rates; some airlines also include radio altitude calls in 10-foot increments from 50 feet to touchdown. The primary purpose of this procedure is to make absolutely certain that someone is watching the gauges all the way to touchdown.

Close to the ground there's no room for hesitant warnings or moments of indecision.

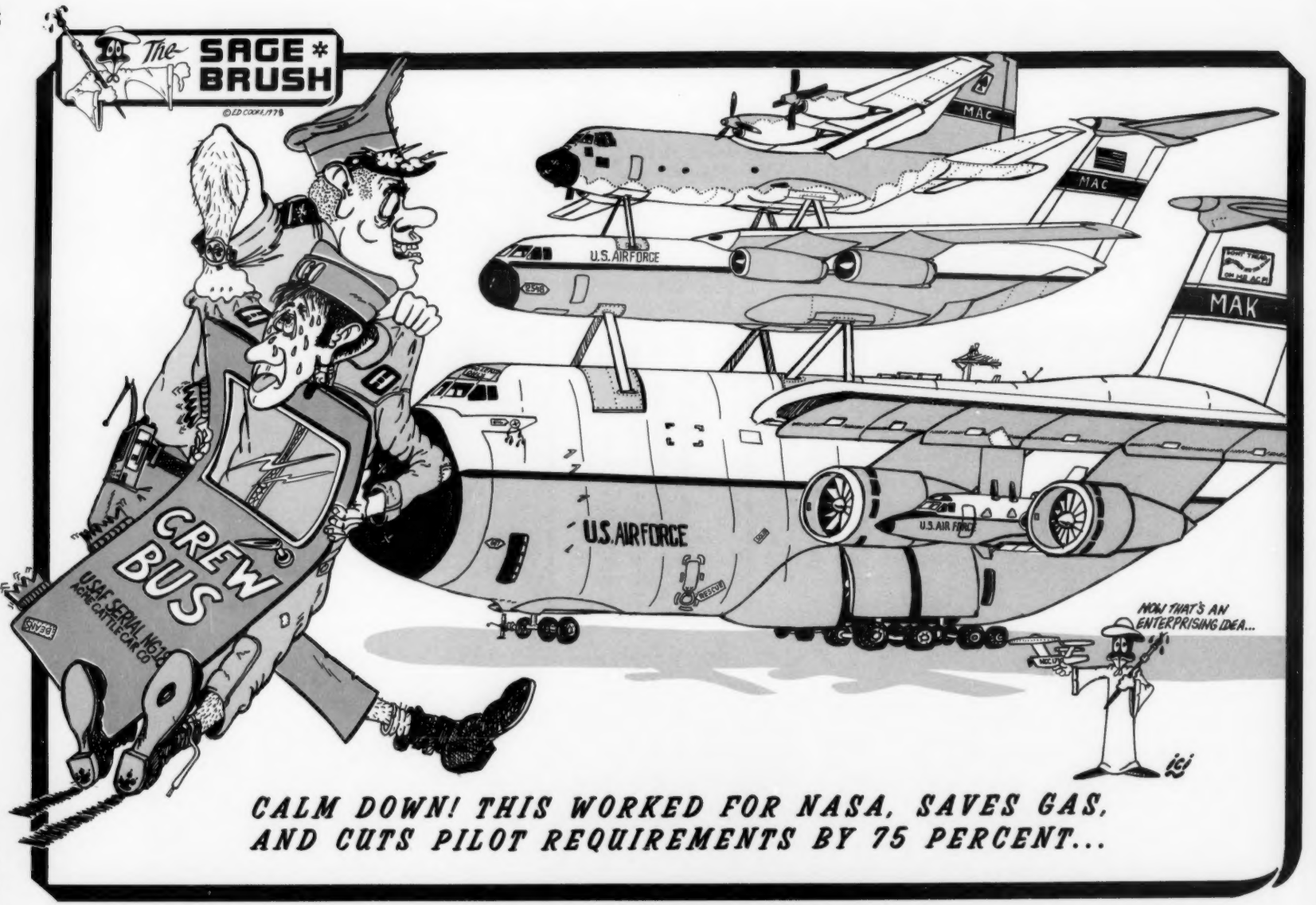
There's no reason why MAC crews can't take advantage of at least part of this technique. Let's listen to an imaginary AC briefing a hypothetical approach to see how it can work.

"Okay, copilot, as soon as you've called, 'Land,' I want you to get back on instruments and stay there. I want you to watch for deviations from the glide path. If you see a descent rate of more than 900 feet per minute, an airspeed change of more than 10 knots, or a GSI deviation of more than one-half dot, call 'Go-around' immediately. If it looks like I'm getting close to those margins, let me know. Above all, keep your head down until touchdown."

You can vary the numbers to suit yourself, but you get the idea. For this kind of technique to work, two things are absolutely necessary: The copilot must understand exactly what's expected of him, and he must be sure that the AC will accept his warning. There's no point in just telling him to "keep an eye on the airspeed," because that kind of direction leaves too much in doubt. How much airspeed change is too much? Ten knots? Fifteen knots? The same thing goes for the glide path deviation. That close to the ground, there's no room for a hesitant remark like, "Uhh, sir, I think we're a little low." By that time, the airplane could be shedding wheels in the overrun—or worse.

The point is, the last 300 feet of an approach can be most dangerous—and the copilot's got better things to do during that 300 feet than watching the AC's trim technique or waiting to see if the landing knocks over the flashlight on the console. Somewhere out there a set of approach lights is just waiting to grab a MAC airplane during a low-vis approach—unless we do something to prevent it.

After all, we can't be lucky forever.


The SAGE BRUSH
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CREW BUS
USAF SERIAL NO.
ACME CATTLE CAR CO.
MAC
MAC
U.S. AIRFORCE
MAK
U.S. AIRFORCE
U.S. AIR FORCE
WOW! THAT'S AN ENTERPRISING IDEA...
CALM DOWN! THIS WORKED FOR NASA, SAVES GAS, AND CUTS PILOT REQUIREMENTS BY 75 PERCENT...

A Flying Fable

Airplanes and people change, but the laws of physics stay the same.

Many moons ago in the days of "Old Shakey" a pilot named Gumpherson believed that he could muscle his way out of a stall as long as he could get enough power from his aircraft engines. He just refused to accept the idea that he would finally be forced to lower the nose in order to get the airspeed up and start the airplane flying again.

In this stubborn fellow's squadron there was an astute instructor pilot who—after failing to convince the skeptical Gumpherson with lengthy explanations on the ground—decided to provide him with a firsthand demonstration in the C-124 itself. Old Shakey was big and reasonably forgiving as "heavies" go, but if you worked at it, you could get her into a stall just like any other plane. This is precisely what the instructor proceeded to do one day when the doubting Thomas was up with him on a local proficiency sortie.

"I'm going to pull the power back until the stick starts shaking," he proposed as they motored along at a comfortable altitude. "Then I want you to have the engineer reapply power and see if you can get out of the stall without changing the flight attitude of the airplane." (Note: On a C-124 the flight engineer had his own set of throttles and usually handled the power settings called for by the pilot.)

As soon as the big bird was waffling and wallowing around in the sky sufficiently, the "Gump" called for his first increased power setting. "OK, engineer, Climb Power." The stick continued to shake. "OK, engineer, METO Power," came the second call. Still there was no improvement. "OK, engineer, MAX Power," he said, his voice rising in pitch along with the four red-lined Pratt & Whitney recips. But even with the throttles almost firewalled, the old girl still couldn't wrench herself from the grip of the stall.

Our skeptic was a skeptic to the bitter end, however, so he made one last desperate call to try and save his pet theory. "OK, engineer, I know this setting isn't in the Dash One—but give me *more* power!"

"My airplane," called the instructor as he took the yoke in hand and nosed the Shakey over.

WHITE

Here's why neither white nor low visibility is required for the pilot to experience spatial disorientation due to low-contrast phenomenon.

Winter's snows set the scene for a special type of spatial disorientation known to helicopter pilots as "whiteout." Last winter the Canadian Armed Forces suffered a tragic accident when the pilot of a Kiowa helicopter attempted a 180-degree turn at very low altitude under whiteout conditions. Part way through the turn the chopper struck the surface and the ensuing crash destroyed it and killed its three occupants.

The Kiowa accident happened during "ideal" whiteout conditions—over a frozen, snow-covered lake, in blowing snow, with daylight fading. Here's the pilot's picture: a flat, white area without enough illumination to give contrast or definition to any surface features and no visible horizon. Under these conditions the Kiowa pilot lost all useful visual cues and, therefore, depth perception. To this situation add a cloud of snow kicked up by the helicopter's rotor wash and you'll understand why it became impossible to de-

termine the aircraft's attitude from outside references. For the Canadian pilot, this kind of spatial disorientation became a killer.

Most aviators who fly where there's lots of snow are familiar to some extent with whiteout conditions, but neither "white" nor poor visibility are required to generate low-contrast disorientation. The composition and color of the surface aren't as important as its flatness and the amount of light available, because depth perception is degraded anytime the surface you're flying over lacks contrast. A dark, plowed field, a placid bay, or a sandy plain can have the same effect as a snow-covered area at times when low illumination levels occur, such as during twilight or on a dull cloudy day. So theoretically you can whiteout, brownout, grayout, greenout, or whatever. Even when prevailing visibility is good, smoke, haze, fog, or darkness may obscure the horizon and contribute to disorientation.

Other things may keep the pilot from seeing the horizon besides atmospheric conditions. Cockpit structural members or personal equipment can also effectively block the horizon. The terrain itself can mask the true horizon; an example is being in a hover near a valley floor far below the surrounding hilltops. Also, if the helicopter is flown low enough—a few feet above a wide expanse of flat terrain—and the pilot is concentrating on ground clearance or operations on the ground, then the horizon may not be within his field of vision. Added together, a lack of surface contrast and no visible horizon are almost sure to cause spatial disorientation.

The best way to prevent a whiteout-related accident is to know about the hazard and either avoid it or be prepared to cope with the phenomenon. Support and rescue missions often require us to fly at low altitudes in marginal VMC over fairly flat and isolated areas, so the hazard is there. If you suddenly encounter a disorienting low-contrast situation, the only reasonable solution is to make an immediate transition from visual to instrument conditions. Even when the transition is completed successfully, you must then climb out of the hazardous area and recover someplace, probably with little outside assistance.

Like the wise single-engine aircraft pilot who always has an emergency landing field in the back of his mind in case the engine should quit, you should have a course of action in mind in the event you suffer disorientation. If you know that the conditions are right for a whiteout or other low-contrast phenomenon, a short briefing like this could save you and your crew: "If I lose visual references, I'll climb to 1,000 feet, turn 90 degrees to the right so we'll be clear of the terrain, and we should be back in VMC within two minutes. If not, we have the Flatland VOR tuned in and we'll proceed direct, climb to 3,000 feet, and request an IFR clearance. If we aren't VFR by the time we get to Flatland, I'll request an instrument approach and land." Of course, there are many other considerations like local air traffic, transponder codes, crew coordination, etc., but the basic idea is to have a plan of action in mind *before* everything turns white.

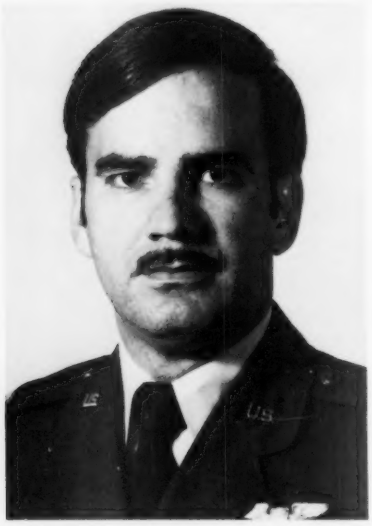
Much of the information in this article is from "Whiteout and the Human Factor in Helicopter Operations" by Lt Col R. M. Fassold, Canadian Armed Forces, published in Hot Line.—*Ed.*

The Airlift Legacy

C-97 Stratofreighter

Designed in 1942 as a transport version of the B-29, the C-97 first flew in November 1944. The first six Stratofreighters went into service with the Air Transport Command in 1947, flying a scheduled freight service between California and Hawaii. Later models were used worldwide, including airlift stints during the Berlin blockade, the Korean conflict, and the evacuation of Dien Bien Phu. In all, 888 C-97's were built before production ended in 1956.

The Stratofreighter was used in a wide variety of roles during its career: troop and cargo carrier, tanker, medevac aircraft, airborne command post, VIP hauler, search and rescue, and flying test bed for turboprop engines. One of the first pressurized transports, it had a 35,000-foot service ceiling and a maximum speed of 375 mph. Power was supplied by four Pratt & Whitney R-4360 radials rated at 3,500 hp each. Gross weight and payload varied considerably among the C-97's six models; maximums were 175,000 pounds and 68,500 pounds, respectively. Average cruise airspeed on MATS missions was 270 mph.



Capt Billy S. Schricker

Capt John L. Carkeet III

TSgt Paul G. Hannel

Captain Schricker and Crew

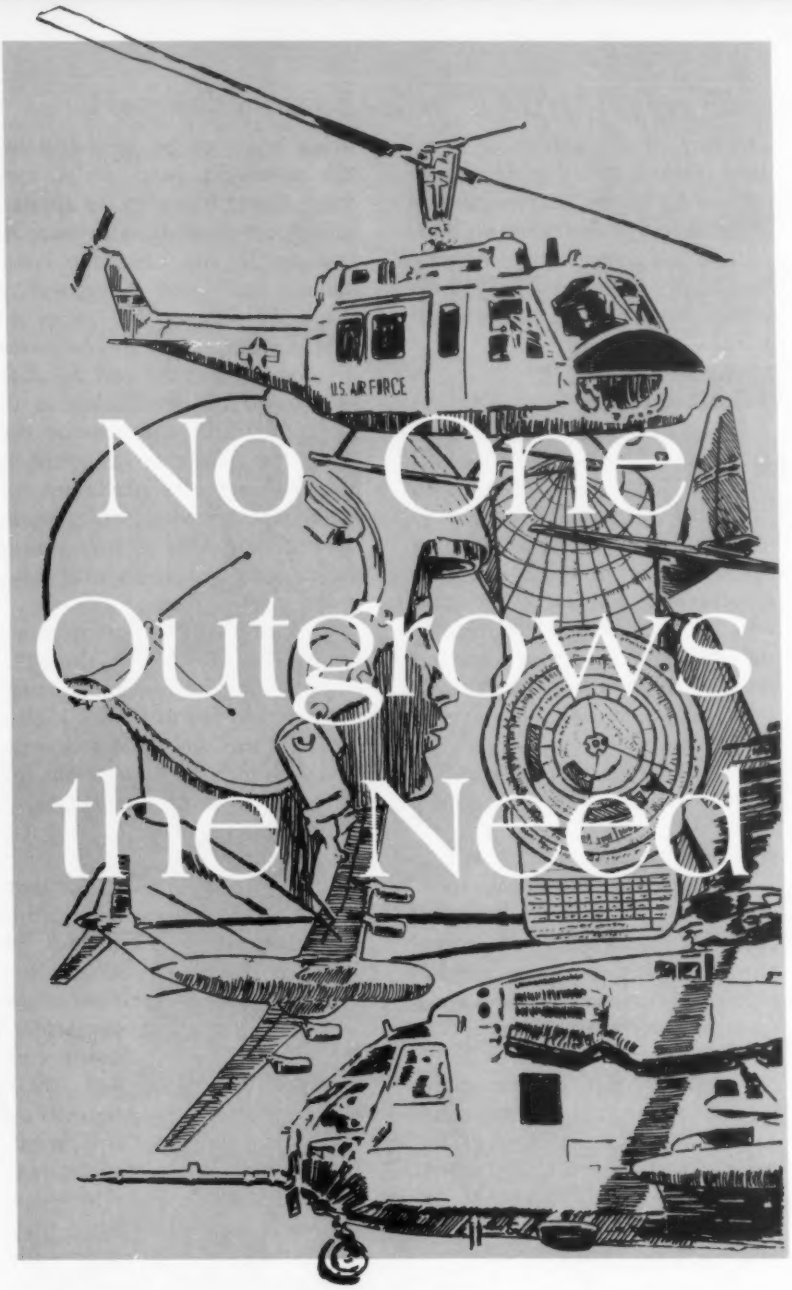
On 7 March 1978, a C-130E and its crew were on the way back to Little Rock AFB, Arkansas, after three and a half hours of transition training at another base. Capt Billy S. Schricker, a flight examiner assigned to 16 TATS at Little Rock, and Capt John L. Carkeet III, a student aircraft commander from 16 SOS at Hurlburt AFS, Florida, were at the controls. TSgt Paul G. Hannel, 16 TATS, manned the engineer's position. The Herk was level at 15,000 feet when the control column suddenly moved full forward and the aircraft went into a steep dive. Neither runaway trim procedures nor full electrical isolation of the trim system had any effect on elevator operation. Using physical force, Captains Schricker and Carkeet overcame extreme control pressures and returned the aircraft to level flight.

Almost immediately, the control column moved full aft. The pilots again overcame the control pressures and leveled the aircraft. During the ensuing period of stable flight, Sergeant Hannel checked the elevator actuator visually but found nothing wrong. Then the column went full forward again, this time with the pilots recovering after turning off all hydraulic assistance to the elevator and reengaging the trim system. During the uncommanded pitch changes, the aircraft's altitude varied from 12,000 to 18,000 feet with vertical velocities of up to 6,000 feet per minute.

The crew performed a controllability check with hydraulic boost off and found they could handle the aircraft with the pilots controlling the yokes and Sergeant Hannel moving the throttles. They continued on to Little Rock, planning for a PAR approach because of the weather. After another controllability check, they set up for a no-flap final approach at 150 knots. Three miles from touchdown, the crew encountered a sudden windshear, the airspeed dropped 20 knots, and the C-130 pitched down. The pilots were physically unable to recover from the dive, so Sergeant Hannel applied full power. Finally the nose of the aircraft came up. The crew leveled the bird at 300 feet AGL, two and a half miles from the runway, and maintained that altitude until approaching the threshold.

As power was reduced for the landing, the aircraft pitched down again—and again full power was required for recovery. The Herk touched down in a nose-high attitude at 150 knots and was stopped with no further problems. Subsequent inspection showed that the only damage was a scraped tailskid.

Captain Schricker and crew earned the MAC Distinguished Individual Safety Award for their superb performance—as well as a *TMF* "Good Show!"



No One Outgrows the Need

A new pilot fresh out of flight school has acquired the necessary knowledge and skills to become a proficient aviator, but he lacks experience. It is one thing for him to fly under the hood in calm weather with an IP beside him, and quite another to inadvertently encounter weather conditions that suddenly put him on instruments when no IP is on board. Inadvertent IMC is often all that is needed for an inexperienced pilot to become involved in an accident. It has happened more than once.

A recent accident involved an OH-58 pilot who became disoriented while hovering in snow. One main rotor blade struck the ground, causing the mast to separate and severing the tail boom aft of the horizontal stabilizer. The aircraft then ended up on its left side. This pilot was fortunate. A bit shaken up, he managed to exit the aircraft through the right cockpit door uninjured.

To begin with, this pilot was flying in weather conditions beyond his capabilities. Further, he persisted in his attempt to continue flight even though he had previously experienced spatial disorientation in a whiteout. He was not adequately trained nor did he have knowledge of the techniques for hovering in falling and blowing snow. An effective unit training program would have lessened the possibility of his being placed in such a situation.

On His Own

It must be remembered that the new pilot has become accustomed to having assistance—somebody to rely on. Namely, the IP. When he embarks on his own, no one is available to make his decisions for him.

In gaining experience, the new pilot must not only develop proficiency in handling his aircraft but also, and what may be even more important, in handling situations—making right decisions and coping with any problems that may arise. Without benefit of unit training, he must acquire this experience on his own. Consequently, he may pick up wrong habits and develop self-taught practices or procedures not found in the operator's manual or contrary to those published. Sooner or later, this means trouble.

Helping Hand

In a sense, then, unit training takes the place of the instructor, or "helping hand," after a pilot leaves flight school. And this kind of helping hand is necessary not only for the new aviator but for the seasoned one as well. Neither outgrows the need for it. The

veteran aviator left to his own designs can develop a case of severe overconfidence to the point that his technique becomes sloppy. Further, he may become so familiar with routine missions that he disregards established procedures.

Another important purpose of an effective unit training program is that it surfaces an individual's strong points as well as his weak ones and points them out not only to the pilot involved but also to his commander. Armed with this information, the commander can intelligently assign missions within the capabilities of his pilots and provide any necessary training. *His failure to know the limitations of his pilots can result in mishaps.*

Recently, during field exercises, another OH-58 crew was detained after completing a mission to a field location because it was thought the aircraft might be needed for another mission. The crew made several requests to be released from further duty because of approaching darkness and the need for crew rest. These requests, however were denied. Finally, around 2100 hours, the aircraft was released for flight back to the training area, which was located on flat terrain devoid of trees or other vegetation. While on final approach to an unlighted landing pad, the aircraft impacted the ground in a level attitude, causing one minor injury and major damage to the aircraft estimated at $250,000. The crew was fatigued and both pilots had limited experience in executing night approaches to minimum or nonlighted areas. In addition, no night training program had been established. Couple these facts with the extremely low ambient light conditions that existed, the absence of vegetation or other land features to aid in depth perception, and the dust present in the area to further restrict visibility and it can readily be seen that the demands placed on these pilots far exceeded their capabilities.

Tailored Program

To be effective, a training program must be tailored to a unit's needs. Consequently, no two programs will probably be exactly alike—even if the units involved are operating in the same geographic area and using the same type of aircraft. Specific mission requirements of each unit are the prime considerations along with the equipment being used and the environment in which the unit must operate. This includes climate and topography.

Special Problems

Although many training tasks can be readily worked into the unit's normal operations, some cannot, and these pose special problems. For example, functions such as inserting and extracting troops in confined areas or tactical missions that require night formation flying fall into this category. Special training is necessary in areas such as these, and often the training hours available to conduct it are insufficient. This is where a good record system can be invaluable. While it won't magically produce extra hours for training, it will show the number of pilots qualified to perform a particular type of mission. If this number is insufficient and the supported unit must have that type of support, then some kind of arrangements will have to be worked out to give the pilots the necessary training and experience.

This may mean an increase in flying hours to be allocated for the following year; or it may mean fewer hours to be applied to support missions, with more to training. *In any case, the commander will not be guessing when he assigns his pilots to specific missions. He will be aware of their capabilities and be able to provide documentation as to what they can and cannot do.* When he makes an assignment, he will know the personnel selected are knowledgeable, experienced, and able to accomplish the mission and do so with maximum safety.

A good unit program does more than point out strengths and prepare and maintain unit personnel in full readiness. It also surfaces any weaknesses associated with the unit's operations for corrective or preventive action.

For Everyone

Although the emphasis for unit training is placed on pilots, the supporting elements must not be forgotten. Training is equally important for maintenance and other personnel, including inspectors. Sooner or later, experienced mechanics are reassigned. Their replacements may be seasoned or green. In addition, equipment changes, and so do maintenance procedures. Even inspectors can become lax, especially when they know they are working with mechanics who are thorough and conscientious.

All in all, effective unit training sharpens the skills of all personnel and maintains the entire unit in a state of readiness to accomplish its mission. It enhances safety, produces pride in the individual, increases his self-confidence and morale, and insures peak performance.

—Flightfax

Honorable Mention, 1978 MAC Flying Safety Writing Contest

The Saga of The Bandersnatch Warning Light

Flying schools that teach you a little about everything may not teach enough of what you really need to know.

by Lt Col Owen M. Lee
443 TCHTS
Altus AFB, Oklahoma
and
Wayne G. Sharples
3625 TCHTS
Tyndall AFB, Florida

There once was an eager young pilot named Harry Jones who spent his time in the carefree pursuit of that elusive thing called flying time. One day his elders, in their wisdom, bade the eager young Harry to go forth and share his knowledge with student pilots known as the Neophytes. Upon his arrival at the Neophyte Knowledge Gathering Place in Oklahoma, the eager young Harry was designated as the "Bandersnatch Warning Light Illuminated" instructor.

"You have four hours to teach the Neophytes all about the Bandersnatch Warning Light Illuminated," said the wise Neophyte Knowledge Gathering Place Chief.

"Four hours!" exclaimed eager young Harry incredulously. "I can tell them all they need to know about it in five minutes. When the Bandersnatch Warning Light illuminates, you have 15 minutes before the tail falls off the aircraft. What else is there to know?"

"Son, you are new to the Neophyte training business and you have much to learn," replied the NKGPC calmly. "You will come to recognize that there is no such thing as too much knowledge."

"Even though there is abso-

lutely no application for it?" asked the slightly chastened eager young Harry.

"My boy, you must remember that we must not only teach our Neophytes how to fly, we must also give them enough knowledge to pass The Test, written by the wisest of all the evaluators of aeronautical skills and lore," replied the chief, nodding his head sagely. "The Test separates the men from the boys, so to speak. Why, just last week a requalifying former flight examiner with 4,000 hours in the airplane flunked it, and it is rumored that the next version will include questions on animal husbandry, nuclear physics, and TV repair."

"Why?" queried the thoroughly abashed Harry.

"The whole man concept," replied the chief with a haunted look in his eyes. "The whole man concept."

And so eager young Harry, wiser in the ways of Neophyte training, began his preparation for four hours of teaching Bandersnatch Warning Light Illuminated. He immersed himself in tech orders, schematics, and electronics texts. He read three biographies of Thomas Alva Edison and topped off his study by speed-reading his way through an entire set of the Encyclopedia Britannica by the light of a Bandersnatch Warning Light Illuminated mockup that he constructed in his spare time.

"Well," he said to himself at this point, "there is a lot more to Bandersnatch Warning Light Illuminated than I realized. The chief was right."

And so, with the aid of 63 color transparencies, 114 35mm slides, 8 schematics (blue for AC and red for DC), a 75-page study guide, two movies, and the mockup that he had built in his spare time, eager young Harry (now the World's Foremost and Most Widely Recognized Bandersnatch Warning Light Illuminated Expert) taught the Neophytes the mysteries of magnetism, electricity, light bulb construction and operation, the properties of light, the color spectrum, the plot of Finian's Rainbow, and how Thomas Alva Edison lost his hearing, with a passing allusion to the fact that 15 minutes after the Bandersnatch Warning Light illuminates, the tail will fall off the aircraft.

The young instructor's eyes widened when Harry showed him the 73-page lesson plan.

At the conclusion of this four-hour presentation, eager young Harry gave the Neophytes a 25-question essay test on the whole thing, except for the fact that 15 minutes after the Bandersnatch Warning Light illuminates, the tail will fall off the aircraft.

"That fact," he mused, "is so simple and apparent that a question about it would be silly. Not only that, everybody would be able to answer the question correctly, and just last week, the Ninyhammer Phase Test had to be completely rewritten because everybody was getting 100 percent, the sure sign of a bad test."

Time passed, and one day the not so eager, not so young instructor, by the dint of his efforts and his ability, date of rank, and the judicious application of transactional analysis when dealing with his superiors, found himself in the role of the Neophyte Knowledge Gathering Place Chief. He was now known as Wise Harry, and the Neophyte Knowledge Gathering Place had been moved to Redland Air Base, Indian Territory.

One day, a new bright-eyed, eager young pilot named George Quartz presented himself in a military manner for duty. "Son," said Wise Harry, "your first assignment will be to prepare yourself to teach the Neophytes all about the Bandersnatch Warning Light Illuminated in four hours."

"Four hours!" exclaimed the eager young George incredulously. "I can tell them all they need to know about it in five minutes. When the Bandersnatch Warning Light illuminates, you have 15 minutes before the tail falls off the aircraft. What else is there to know?"

"Son, you are new to the Neophyte training business and you have much to learn. There is much to teach about Bandersnatch Warning Light Illuminated. Look at this."

Wise Harry tossed his own carefully honed, single-spaced, 73-page lesson plan on the desk.

An hour and a half later, eager young George lifted his bloodshot eyes and sighed. "To think," he said, "that I have been flying this machine for five years without knowing any of that. I guess it just goes to prove that fools rush in where angels fear to tread."

"Strange that you should mention angels," said Wise Harry, a strained expression crossing his countenance. He remembered the sadness he had felt when Captain Joe Smith, the only student ever to score 100 percent on his 25-question essay test, was killed along with all of his crew because the tail fell off the aircraft. A multimillion dollar airplane lost—five widows and 14 children without fathers—a sad time indeed. The accident report stated that the

pilot did not know that 15 minutes after the Bandersnatch Warning Light illuminates, the tail will fall off the aircraft. How could his best student have not known such a simple and obvious thing? "Maybe, just maybe . . ." he mused, his eyes glimmering with a radical thought. "But, what would we do with the 3 hours and 55 minutes left over? And, of course, there is The Test to worry about."

The next day, Wise Harry was going through his in basket and there was a commandment from Fort Fumble that said, "Thou Shalt ISD." It listed five cardinal rules that must be obeyed: (1) thou shalt insure that each course is structured to contain precisely the training required; (2) thou shalt give only training appropriate to the individual; (3) thou shalt measure training on proficiency, not course length; (4) thou shalt make maximum use of least cost training before progressing to more costly training; and (5) thou shalt, when a skill is particularly difficult, seek ways to alter the task to make it easier.

And there was a commandment from on high that said, "Thou Shalt ISD."

And so it came to pass that Wise Harry and Eager Young George gathered about them people of wisdom in the ways of ISD and they applied its rules with conviction.

Today, if you perchance are bade to go forth to Redland Air Base, you will still find Wise Harry Jones and Eager Young George Quartz there. But the four-hour block on the Bandersnatch Warning Light Illuminated is now taught in five minutes and The Test has been retired into history. Eager Young George has been promoted, based on the significant improvements in identifying the critical aspects of the pilot's job and insuring that each pilot can do that task before graduating. Also, thousands of dollars in training costs have been saved.

But George is not so eager and young as he once was. Traditions change slowly and there is still much work to be done. There are still those who believe you must memorize thousands of trivial facts to be a safe, professional crewmember.

Wise Harry is no longer the World's Foremost and Most Widely Recognized Bandersnatch Warning Light Illuminated Expert. He is now recognized as the Neophyte Knowledge Gathering Place Chief who saw the light—the ISD light.

ABOUT THE AUTHORS

Lt Col Owen M. Lee graduated from the University of Missouri with a degree in Civil Engineering and an AFROTC commission. Since completing navigator training, he has accumulated more than 3,500 flying hours and served as an instructor navigator in the Starlifter. Other assignments included duty with the 7th and 13th Air Forces during the SEA conflict, Air Command and Staff College, and forecasting the weather at Tyndall AFB, Florida, and Kadena AB, Okinawa. Before moving to Altus AFB, Colonel Lee was Assistant Professor of Aerospace Studies at Florida State University where he also received a master's degree in Instructional System Development (ISD). He is currently the Training Operations Officer for the 443d Technical Training Squadron.

Wayne G. Sharples is a supervisory training specialist (GS-12) with the 3625th Technical Training Squadron at Tyndall AFB, Florida. Mr. Sharples served in World War II and Korea as a bombardier. He has worked in civil service since 1965 and is an expert on programmed instruction.

Deja Vu*

*(day-zha-voo), [Fr. lit., already seen], the illusion that one has previously had a given experience.

Located 20 miles northwest of Tokyo, Yokota sits at the eastern edge of a mountain range on the largest Japanese island, Honshu. The city and the mountains give rise to Yokota's two greatest hazards: restricted visibility and high terrain.

Japan's biggest metropolitan area generates smoke and haze which often limit visibility at Yokota. However, the airport is well equipped for IFR operations. There are several approaches to runway 36/18 (11,000 feet by 200 feet), which also has high intensity approach and runway lights and VASI's. The city seems jammed against the start of the 1,000-foot overruns on both ends of the runway, and tall power and telephone poles stick up near the glide slopes.

Terrain starts rising rapidly four miles from the airfield, reaching nearly 3,000 feet eight miles to the northwest. Twenty-four miles to the west is a 6,600-foot mountain. With these hazards, extra care is required when you're approaching this stop in the Land of the Rising Sun.

—Adapted from ISD-Q6-467

Yokota AB

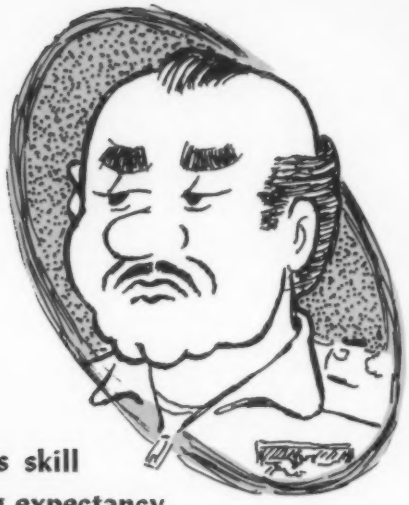
Japan (Elevation 547 feet)

Two and a half miles on final for runway 36. The city of Yokota is on the left.

Note the tall telephone poles that line the road near the final approach course to runway 36.

Factories along the final approach to runway 18 may contribute to reduced visibility.

C.R. TERROR



The Magnificent Major summons all his skill to cope with Lieutenant Hand's unique landing expectancy.

But, Boss, you can't do this to me!" the Master Manipulator begged. "I'm not as young as I used to be. Think of my heart!"

Lieutenant Colonel Rote, commander of the 1313th TAS, slowly shook his head. The Great One's plea had apparently left him unmoved.

"Sorry, C.R., but I've got to do it to somebody. Besides, we've been over here nearly three months and you've only flown with him twice. It's your turn."

C.R.'s shoulders sagged in dejection. Ever since Lieutenant Linus Site, the scheduler, had broken the news to him, he'd been dreading this mission and had spent most of a sleepless night trying to think up excuses not to fly. Now there was no way out. He was doomed. He had to fly with . . . Lieutenant Hamilton Hand!

The Great One shuddered. Ham Hand—a name that made AC's blanch, squadron commanders weep, and stan/eval pilots clutch at their ulcerated stomachs. Known throughout the MAC system as the World's Worst Copilot, Hand was fast becoming a legend in his own time. It had begun on that distant day back at the Academy when he'd managed to stall out on short final in a hot-air ballon, and now his exploits were legion. There was the gear-up formation takeoff in a T-38 at Willie—the 35,000-foot split-S in a 141 at Yokota—the stuck mike button on clearance delivery frequency at O'Hare . . .

Colonel Rote's voice broke into the Rotund One's gloomy thoughts. "And remember, you've got to get him a landing. He's only got three days before he goes noncurrent."

"Wait a minute," C.R. protested. "I saw him down at base ops the other day—he was on a local. How come he didn't get a landing then?"

The colonel sighed. "The IP couldn't work up enough nerve to let him try. Said he kept remembering the time Schmedlap had his nervous breakdown."

"Oh—you mean the time Hand got the throttles mixed up with the condition levers?"

"Yeah—feathered three and four before Schmedlap could stop him. Good thing they were already in the flare. By the way, didn't you have a little problem last time you flew with him? What happened, anyway?"

C.R. winced at the memory. "Sir, you wouldn't believe it. We were on our way into Pastrami when we lost the aux hydraulic system. Then we had to shut down number one for an overheat. However, I handled it all in my usual exemplary fashion and we returned to terra firma with no problem.

"We were just turning off the active when I told Hand to shut down number four. So instead of using the condition lever, he reached up and started counting fire handles—from right to left—and shut down number two. That did it for the utility hydraulics. If it hadn't been for the drainage ditch on the other side of the taxiway, we'd probably still be rolling."

The colonel looked puzzled. "Wait a minute—if he started counting from right to left, how did he wind up at number two?"

"Simple—he started with the GTC handle."

"I thought we had that right-left business straightened out," Colonel Rote frowned. "Why, just last month he identified his left hand correctly three times in a row. Anyway, he's developed a new habit. You might want to

watch out for it."

"What's that, sir?" Apprehension and curiosity mingled in C.R.'s voice.

"Oh, it's not really bad. It's just that he keeps setting the radio frequency in the IFF."

The Ambient Aeronaut suppressed a desire to groan out loud. "Thanks for the warning, sir. I'll watch it."

"Okay then. Remember to get him a landing—and good luck."

As C.R. saluted and headed for the door, his face bore the unmistakable chagrin of a man with hemorrhoids on his way to a proctoscopy appointment.

The World's Loosest Lieutenant was already waiting at base ops when C.R. arrived. He looked remarkably like the Master Manipulator himself—a fact which C.R.'s squadron-mates noted frequently, but seldom to his face. At the moment, Ham was seated in a far corner with his back to the wall. He looked rather apprehensive. A training folder, weighing several pounds and labeled "Volume III," lay on an adjacent table.

C.R. noted his copilot's look of concern. "What's wrong, m'boy? You look as though you expect Major MacZaminer to leap from behind a bush and no-notice you within an inch of your life."

"Oh, it's not that, sir," the Adolescent Aeronaut replied in a worried tone. "It's those Navy guys I heard about. I ran into some of them in a bar one night, and they can really be rough."

"Navy guys?" C.R. queried. "What Navy guys?"

"You know—the ones that drive tractors and build runways and stuff."

"You mean the Seabees?" The Great One's brow furrowed in puzzlement. "I don't think there's a Seabee within a thousand miles. Why are you worried about Seabees?"

"Well, sir, the command post controller said there were some pretty mean Seabees in the local area and we'd better watch out for—"

"AAARRGH!" C.R. bellowed. "You cretin! You dunce! Those are *CB's, not Seabees.* They're not Navy guys, they're thunderstorms!"

The Junior birdman's countenance brightened considerably. "Oh, yeah? Hey that's great? For awhile there I thought we were really going to have some problems."

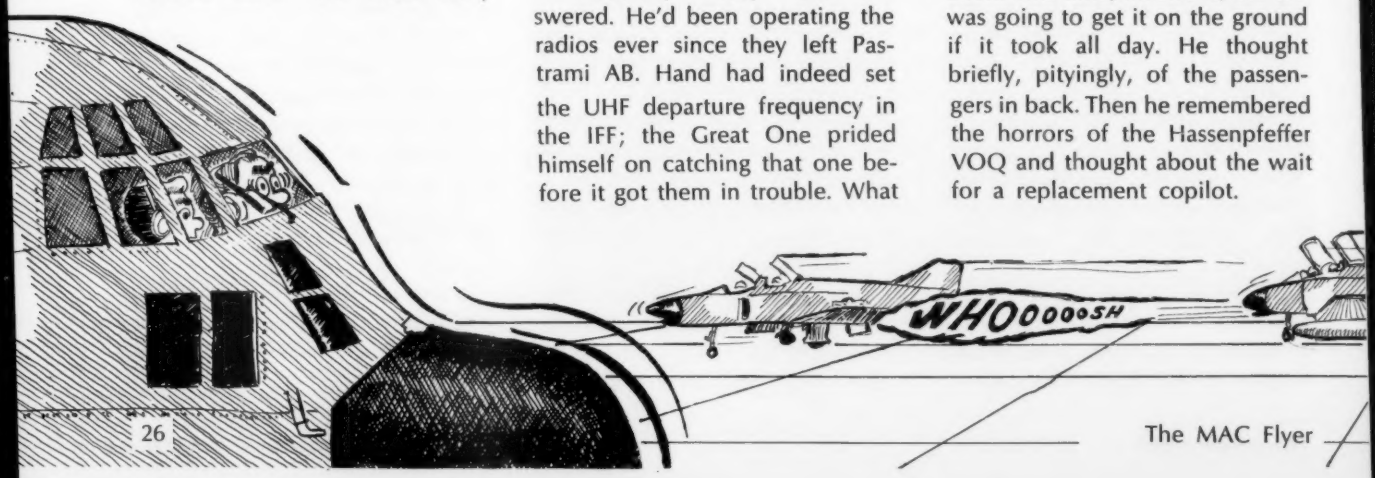
"Hassenpfeffer Approach, this is Flunk 36," the Paunchus Pilot intoned.

"Flunk 36, Hassenpfeffer Approach," the controller replied with a noticeable accent. "You are cleared for a visual approach to runway 27. You change now to tower frequency."

"Three-six, wilco," C.R. answered. He'd been operating the radios ever since they left Pastrami AB. Hand had indeed set the UHF departure frequency in the IFF; the Great One prided himself on catching that one before it got them in trouble. What he hadn't spotted, however, was the IFF squawk set into the UHF. It had taken a couple of calls on guard to get that cleared up. Finally, C.R. had summarily ordered his Somnambulant Sidekick to stay off the radios. Hand was now sitting contentedly in the right seat, humming softly and watching the scenery go by. C.R. noticed that he moved his lips when he hummed.

The Master Manipulator was presently facing a crisis. He'd been trying to get Hand a landing for two days, but all his efforts had been foiled either by circumstance or by the lieutenant's overwhelming ineptitude. At the few stops they'd made with no passengers on board, each of Hand's attempts at a landing had ended with C.R. snatching the Herk from the brink of disaster at the last moment. The Rotund One broke into a cold sweat as he remembered his copilot's attempt at a crosswind correction in the flare. He'd never forget his view of the runway sliding sideways beneath them as Ham tried to correct for a left crosswind with left rudder, right aileron, and full power on number four.

At any rate, Hassenpfeffer was the last stop for the day and Hand would go noncurrent tomorrow. It was raining now, but still VFR. C.R. gritted his teeth in determination. This time, he swore, the kid was going to get it on the ground if it took all day. He thought briefly, pityingly, of the passengers in back. Then he remembered the horrors of the Hassenpfeffer VOQ and thought about the wait for a replacement copilot.



"Okay, Hand," he sighed. "You've got it."

Four go-arounds later, it was beginning to look as though the Bumbling Brownbar was getting the hang of it. On the last approach, Tower hadn't even called out the crash crew. But they were getting low on gas, and Sergeant Torque had had to leave the cockpit to help Ty Downs pass out barf bags. This time, C.R. thought, has got to be it.

"Now this time," he instructed the right-seater, "try to remember to look at the horizon when you flare—the one in *front* of the airplane. And see if you can get the airspeed down enough so we can lower the gear and flaps. And, please, *please* stop trying to adjust your seat on short final. Got it?"

"Uhh, roger, sir, you've got it," Hand replied as he adjusted his seat.

"Oh, for . . . listen, meathead, and do what I tell you. Put your left hand on the throttles—no, it's the hand on this side. The throttles, not the condition levers. Okay, now put the other hand on the yoke—you've only *got* one other hand, dammit . . ."

So it went as C.R. coached his maladroit protege through the approach. They were a little high over the threshold—about 500 feet, the Ace of Aerospace estimated—and a little hot. "Okay, Hand, let's go to full flaps," he ordered.

"They are full, sir," Hand replied, pointing toward a dial. As he leaned forward, he shoved on the yoke. The airspeed began to increase still more.

C.R. followed his copilot's gaze. "You utter nincompoop," he bellowed, "that's not the flap indicator—it's the cabin altimeter! No wonder we're so hot—the flaps are still up!" He looked outside. The Herk was about 50 feet in the air and nearly halfway down the runway. "C'mon, Hand, let's get this thing on the ground!" Thoughts of another go-around passed momentarily through C.R.'s mind, but he staunchly rejected them. This kid, he thought grimly, is going to make this landing if it kills us all. And besides, there's plenty of room to stop.

The 130's nose gear settled onto the rain-slick runway with a pronounced thump. Then the mains. Then the nose again. Then the mains again. "Get the throttles back," the Master Manipulator yelled. "Get on the binders. We've gotta get stopped."

Letting go of the yoke, Hand leaned over, grabbed the throttles with both hands, and yanked them into ground idle. The airplane began a gradual swerve to the left.

C.R's glance snapped to the torque gauges. "Pitchlock on number four! Feather it, quick!"

Within the chubby copilot's brain, synapses and neurons immediately formed a maze of connections—all of them wrong. Starting with the index finger on his left hand, he counted throttles—one, two, three, four. Taking a firm grip on the number one throttle with his pinky and thumb, he moved it smartly into full reverse.

The world became a blur. C.R. watched the tower slide by as the Herk spun to the left. Then the GCA shack. Then the tower again. Mud sprayed in all directions as the gear dug into the ground and collapsed. The crippled brown-and-green slid toward a taxiway and a flight of F-4's. The fighter jocks spotted the many-motored juggernaut heading their way and prudently scattered. Those who could escape by moving down the taxiway did so. The rest headed for the weeds.

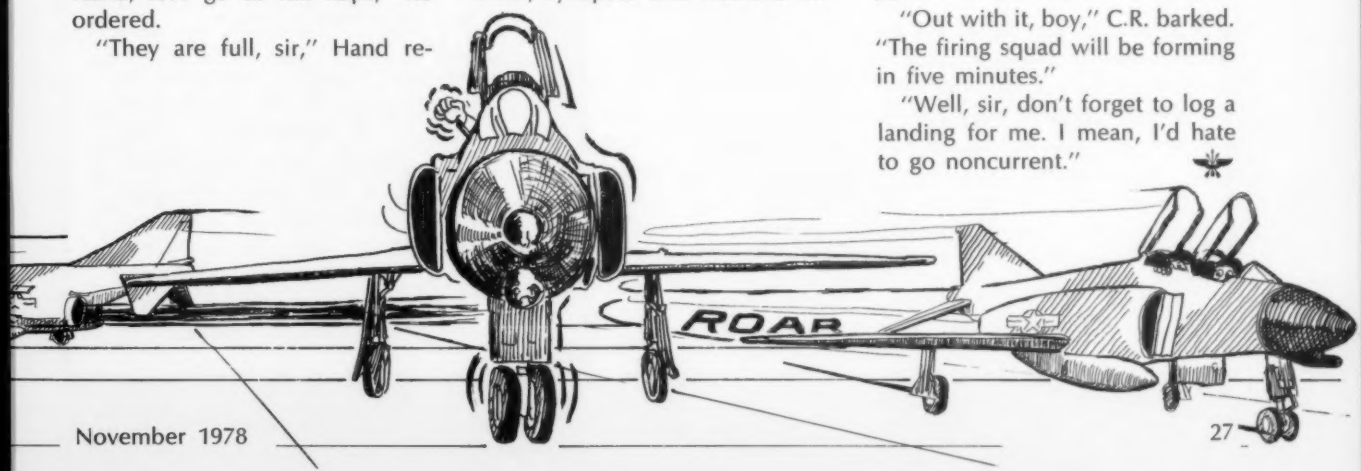
Finally, the Herk ground to a stop. C.R. pulled the fire handles, although the two engines which still had props attached had already flamed out. The silence was broken by the faint wail of sirens and by Ty Downs' report that everyone was okay in back.

The Master Manipulator stared at his right-seater with a look that would have poisoned a waterhole. "Hand," he gritted, "if you have any last requests, you'd better make 'em now."

"Well, uh, there is one thing, sir—"

"Out with it, boy," C.R. barked. "The firing squad will be forming in five minutes."

"Well, sir, don't forget to log a landing for me. I mean, I'd hate to go noncurrent."



Quick Stoppers

Self-Fulfilling Prophecy

As the Sabreliner cruised westward at FL 350, the pilots spotted an oil-pressure-low light glowing. A quick check of the engine instruments and oil pressure gauges showed nothing unusual—so they figured it was probably a false indication. But the crew wasn't going to get away that easily. Fifteen minutes later the number two oil pressure gauge dropped to 20 psi and then fluctuated from 0 to 40 psi. The indication was obviously not bogus now, and the crew shut down number two engine.

After landing, investigators found the source of the warning light's apparently false indication. The oil-pressure-low light switch on number two engine had failed due to fatigue, turning on the warning light while also allowing the engine's oil to be slowly pumped overboard.

Howz That, Groundpounder ?

The MAC crew was told to show some Army Transportation Branch troops how the Hercules makes short-field landings. With the soldiers in back, the Herk made its way around the GCA pattern with everything proceeding normally until they were 500 feet AGL on final. Flaps were lowered to 100 percent, but the pilot didn't level off, slow to max effort approach speed, or pick up the typical four-degree glide slope. Instead, the left-seater stayed with the GCA glide slope till three-quarters of a mile and then sighted the Herk's nose on his aim point. His efforts were partly successful because the C-130 touched down on the aim point and made a three-point landing—two aft main gear wheels and the tail skid.

The tower controller saw a ball of fire and smoke come from under the Herk on landing, so he called out the fire department. Firefighters checked the back of the 130 and couldn't see any damage, so the aircrew pressed on with their demonstration, including an engine-runing off and onload, a second demonstration sortie, and refueling for a flight to a neighboring airport.

After takeoff on the third sortie, the Herk wouldn't pressurize so they diverted to the nearest base with C-130 maintenance. There the ground crew discovered damage to the ramp, tail skid, and aft lower fuselage. We don't know if the Army transportation folks were impressed, but we know that the crew's demonstration cost $13,372 for repairs.

A Case of Breaking and Exiting

During a high-level tactical airdrop mission, the C-123 loadmaster went back to the left troop door to check the deicing boots on the left wing. He stooped down, looked the system over, then moved away—and seconds later, the troop door vanished into the night.

Investigators found that the copper safety wire on the troop door emergency release handle could easily be broken by an inadvertent downward push. The loadmaster, who was attired in heavy winter flying gear, didn't feel any contact with the handle; but the push was apparently enough to break the wire and cause the door's exit. The moral, of course, is that working around doors and hatches requires a little extra caution. An inadvertent exit could spoil your whole day—or night.

Lockheed Snow Blower

As the snow blower cleared out the hardstand, a transient alert person approached and told the blower driver that the airplane intended for the parking spot was due in half an hour.

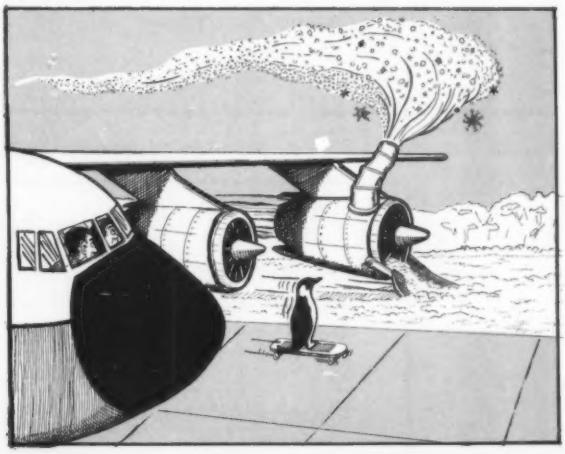
"No sweat. Should be through by then," estimated the driver. But about five minutes later the blower stopped flinging flakes and was replaced by another machine. By the time the Starlifter showed up on final, the blower operator and his machine had departed the scene, leaving a 57-inch snow bank along the perimeter of the hardstand.

After landing, the C-141 was led to the hardstand by a follow-me truck. As they approached the intended parking spot, the TA crew signalled the truck and airplane drivers to stop. Maintenance men were busy clearing rocks and debris left in the parking area by the snow removers. Meanwhile, the crew became suspicious about taxi clearances within the snow-bordered hardstand, so the AC asked one of the engineers to post himself in the left cockpit window and watch the left wing.

In a couple of minutes the follow-me driver thought he saw a groundcrewman motion for him to bring the 141 in, so he cautiously started leading the Starlifter into a sweeping right turn along the taxi line. Seeing the big airlifter unexpectedly move forward, the marshaller ran to his normal post in front of the intended parking spot and the other maintainers abandoned the area.

As the left-seater steered the Starlifter into the hardstand, the number one Pratt & Whitney slid onto the snow bank. The bifurcated blower kicked up a great plume of snow as it unwittingly attempted to finish the job the ground-bound snow remover had started. The crew immediately shut down all the engines, but considerable damage had already been done to number one.

This incident became inevitable when both the follow-me driver and the AC decided that by tracking along the yellow taxi line the Starlifter would have adequate clearance from the snow berms around the parking spot even without a wing walker. Unfortunately the precise distance from the guideline to the snow bank only equalled the measurement from the 141's centerline to the number one nacelle.



QS continued

Lots of Command–Little Control

After a successful air refueling hookup, the copilot let the Galaxy slip back into the precontact position behind the Stratotanker before relinquishing control to the AC. When the left-seater took the yoke, he noticed that he could make large control movements with little apparent pitch change. This situation isn't too bad for smoothing out your control technique, but the pilot found it very disconcerting because the copilot's yoke didn't even move along with his controls. Figuring that the situation was out of hand as far as he was concerned, the AC gave the aircraft back to the right-seater whose yoke still appeared to work fine.

A quick walkaround check of the cavernous C-ship revealed a control cable hanging slack in the cargo bay. The crew correctly figured they had a locked-out cable tension regulator and reset it, returning both command *and* control to the pilot.

Postflight investigation showed a sheared pin in a flight control interconnect rod. After the cable tension regulator locked out, forces transmitted through the pilot's yoke to the aft interconnect rod were unable to overcome the variable feel unit on the copilot's flight controls.

Jolly Disco

The jet wash from big transports has rocked and rolled small airplanes, security policemen, and ramp vehicles; it has even blown away part of a runway. Helicopters have now joined ranks with the air-jumbling jets—as shown in the following incident.

The Jolly Green landed at a breezy airport and taxied to the terminal for a passenger pickup. As the H-3 passed about 100 feet upwind of a Cessna parked on the civilian ramp, its rotor wash (coupled with the 20-knot prevailing wind) set the light plane rocking and tipped it up on its left wing. The wingtip and left wheel fairing were damaged. Although Mother Nature and the Jolly Green driver can be called on to pay the piper for this dance, the Cessna pilot who left his airplane untethered has to share the bill.

Notable Quote

A large measure of self-discipline is required to complete vital actions with neither error nor omission. Unfortunately, commanders can only encourage their subordinates to develop this special type of discipline; it is almost impossible to enforce it. Therefore, if self-discipline is not an infallible solution to the problem—what is?

—Air Clues

After Deadline

"IF YOU DON'T LIKE THE WEATHER, TELL US," says Air Weather Service. AWS wants aircrews to let them know whenever weather services cause problems, and they need to know quickly. Much of the weather information that's given to aircrews is filed for two weeks or less. Some is stored at Global Weather Central, but retrieving it is time consuming and costly. Weather data is most easily located during the first 24 hours after it's used. Therefore, if you're going to file an HR that might require weather data for its investigation, turn it in as soon as possible after landing so the facts will be readily available.

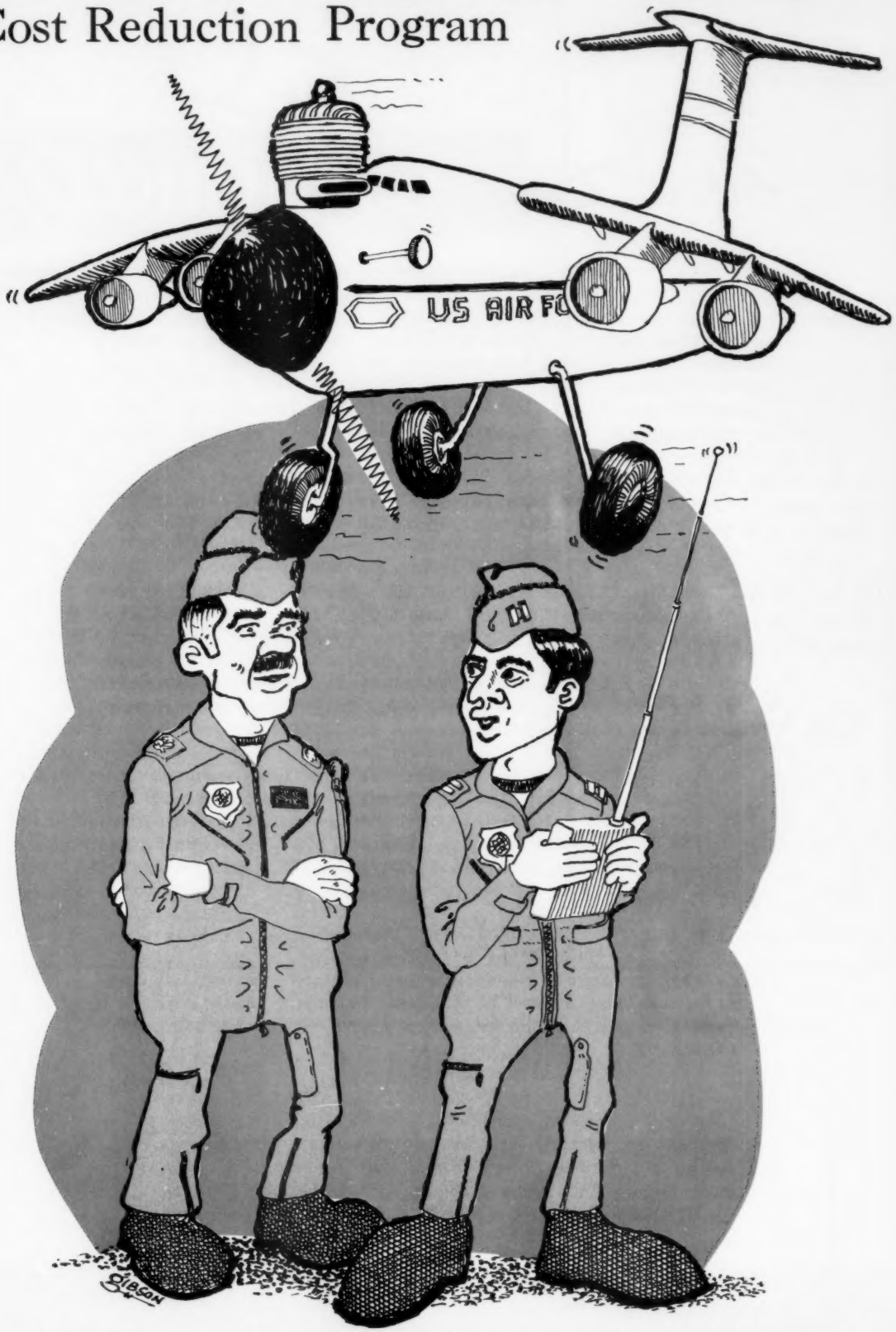
UNCONTROLLED AIRSPACE STILL EXISTS. There's a chunk of it over the South Atlantic that MAC aircraft are regularly sharing with commercial jetliners. A MAC crew recently avoided disaster when they spotted a jumbo jet at their flight level on a collision course. In this case the aircrew was truly the final (and only) clearance authority, and their use of see-and-avoid paid off.

THE LOVELY LADY on page 3 is Miss Sue Strotheid. Miss Strotheid works in the base housing office at Scott AFB, Illinois. She graciously offered her modeling services to the World's Greatest Aviator and the TMF staff to help us advertise the opening of the 1979 MAC Flying Safety Writing Contest.

LOOK FOR THE DECEMBER MAC FLYER. Some of the features will include: a Starlifter birthday salute, a TMF writing contest Honorable Mention story, a potpourri of ways no airplane should ever be loaded, Yuletide reminiscences by C.R. Terror, and the usual galaxy of star-studded TMF regulars.

☆U.S. GOVERNMENT PRINTING OFFICE: 1978-765-097/7

FLASH: MAC Begins New Training Cost Reduction Program



That finishes up my requirements for the quarter, Major. She's all yours.